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IS 4094 (1967): Forceps, Sterilizer, Cheatele's Pattern [MHD  
1: Surgical Instruments]



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IS : 4094 - 1967

*Indian Standard*

REAFFIRMED

SPECIFICATION FOR FORCEPS,  
STERILIZER, CHEATLE'S PATTERN

UDC 615.472.4



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INDIAN STANDARDS INSTITUTION  
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG  
NEW DELHI 1

Price 10/-

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July 1967

AMENDMENT NO. 1 JULY 1975

TO

IS:4094-1967 SPECIFICATION FOR FORCEPS,  
STERILIZER, CHEATLE'S PATTERN

**Alterations**

(Pages 7 and 8, clauses 6.2 and 6.2.1) - Substitute the following for the existing clauses:

'6.2 Corrosion Resistance - The instrument shall satisfy the boiling and autoclaving test as mentioned in IS:7531-1975\*.'

(Page 8, foot-note) - Insert the following foot-note at the bottom of the page:

'\*Method for boiling and autoclaving test for corrosion resistance of stainless steel surgical instruments.'

(CPDC 11)

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Reprography Unit, ISI, New Delhi

# *Indian Standard*

## SPECIFICATION FOR FORCEPS, STERILIZER, CHEATLE'S PATTERN

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*( Continued from page 1 )*

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# *Indian Standard*

## SPECIFICATION FOR FORCEPS, STERILIZER, CHEATLE'S PATTERN

### 0. FOREWORD

**0.1** This Indian Standard was adopted by the Indian Standards Institution on 20 April 1967, after the draft finalized by the Surgical Instruments Sectional Committee had been approved by the Consumer Products Division Council.

**0.2** The formulation of Indian Standards on surgical instruments has been taken up on the recommendations of the Advisory Committee for Development of Medical Instruments, Equipment and Hospital Appliances, Government of India.

**0.3** This Indian Standard is one of a series of Indian standards on surgical instruments. Other standards published so far in the series appear on 4th cover.

**0.4** Several types of sterilizer forceps are used for handling sterilized instruments, utensils and other medical items. This standard specifies the forceps which are to be used for handling instruments only.

**0.5** This standard requires reference to IS : 3642-1966\* certain provisions of which, subject to the limitations specified herein, are applicable.

**0.6** In preparing this standard, assistance has been derived from the following:

IND/GS/MED/126(b) Forceps, sterilizer (Cheatle's). Chief Inspectorate of General Stores, Ministry of Defence, Government of India.

B.S. 2905 : 1957 Cheatle's sterilizer forceps. British Standards Institution.

**0.7** For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS : 2-1960†. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

\*General requirements for surgical instruments.

†Rules for rounding off numerical values (*revised*).



## **IS : 4094 - 1967**

### **1. SCOPE**

**1.1** This standard specifies the requirements of sterilizer forceps ( Cheatle's pattern ) used for handling sterilized instruments.

### **2. MATERIAL**

**2.1** The forceps shall be made of stainless steel conforming to designation 22Cr13 or 30Cr13 of Schedule V of IS : 1570-1961\*.

**2.2 Screw** — The screw shall also be made of stainless steel. The steel shall be the same as that used for the blade; alternatively, it shall conform to designation 20Cr18Ni2 of Schedule V of IS : 1570-1961\*.

### **3. SHAPE AND DIMENSIONS**

**3.1** The sterilizer forceps ( Cheatle's pattern ) shall be of two types, namely, light and heavy. The shapes and dimensions of the two types of forceps shall be in accordance with Fig. 1 and 2 respectively.

**3.2 Joint** — The forceps shall be made with a screw joint conforming to 6 of Section 2 of IS : 3642-1966†. The screw used shall be of slotted cheese head type and shall be riveted to have a smooth snap head ( see Fig. 3 ).

**3.3 Jaws** — The inner surface of the jaws of heavy type forceps shall be serrated over the portion shown in Fig. 2. The pitch of the serration shall be 2 mm. The serrations shall be transverse conforming to 2 of Section 1 of IS : 3642-1966†. The serrations on both the jaws shall be so made as to have a crest-to-crest contact.

### **4. WORKMANSHIP AND FINISH**

**4.1** The forceps shall be free from scale, burrs, pits and like defects. All the edges shall be smooth and even.

**4.2** The serrations of the jaws of heavy type forceps shall be clear and clean. All the parts shall be passivated and highly polished.

### **5. HEAT TREATMENT**

**5.1** The forceps shall be uniformly hardened and tempered to give a hardness of 400 to 460 HV.

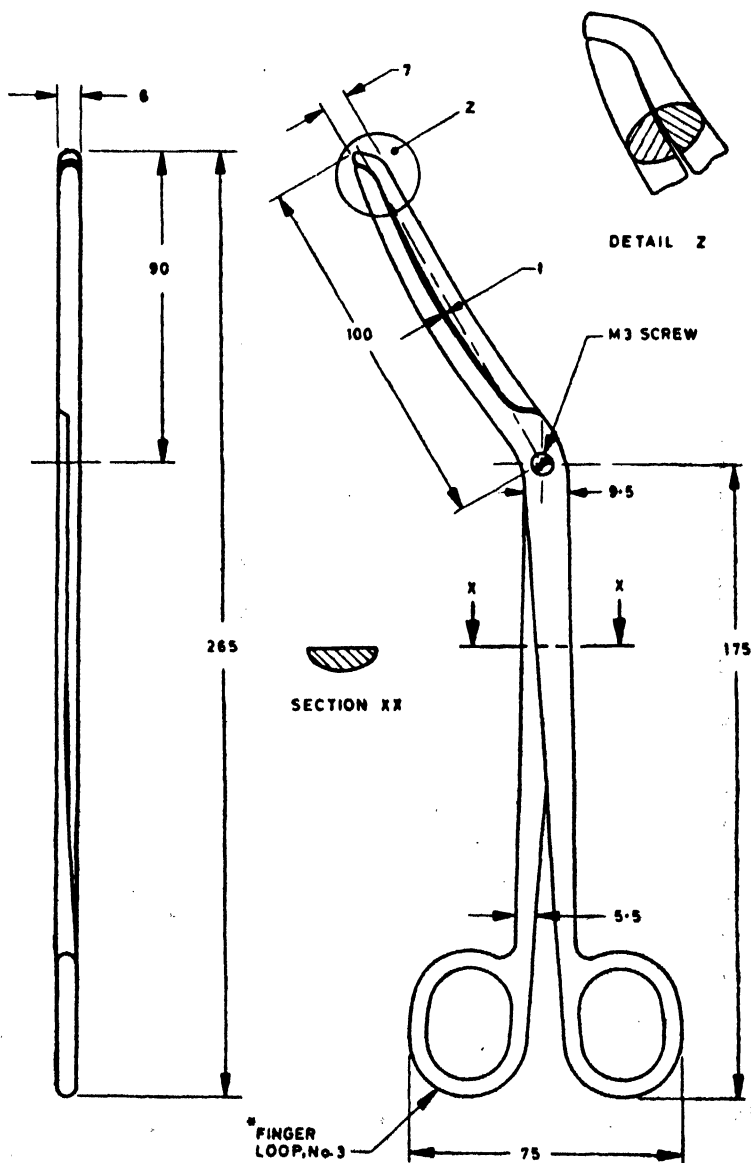
### **6. TESTS**

**6.1 Flexibility Test** — The flexibility shall be tested in the following manner.

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\*Schedules for wrought steels for general engineering purposes.

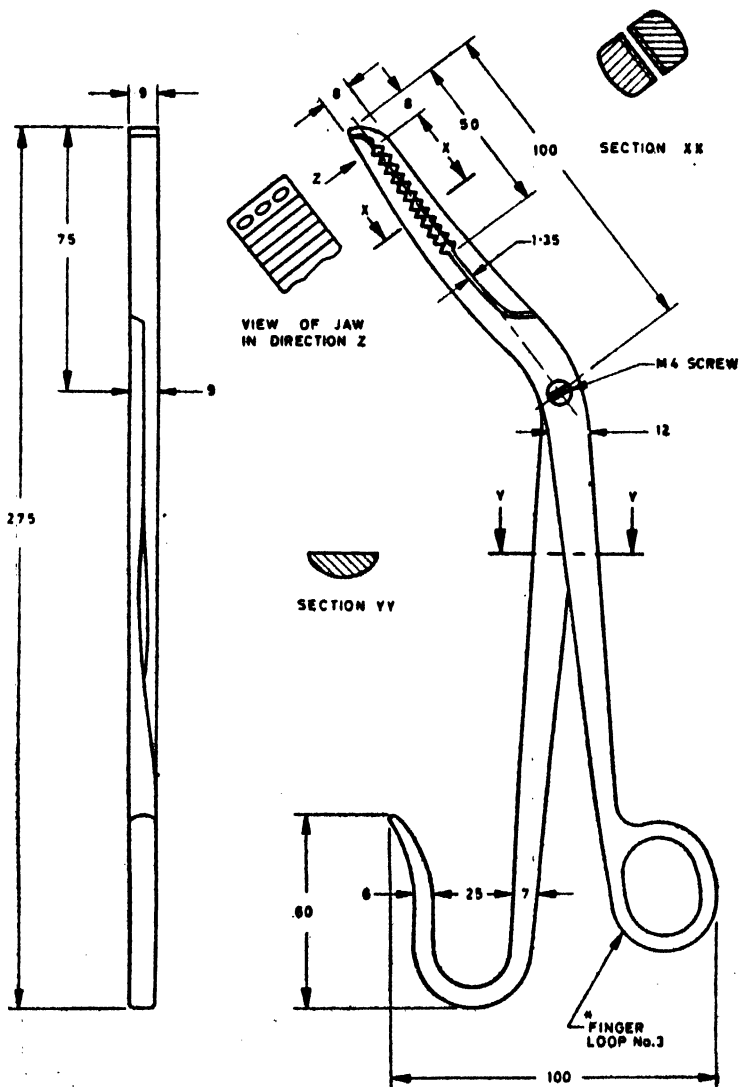
†General requirements for surgical instruments.



\*See IS : 3642-1966 General requirements for surgical instruments.

**All dimensions in millimetres.**

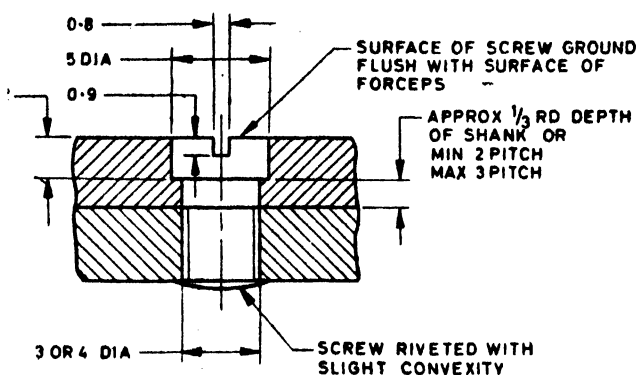
**FIG. 1 LIGHT CHEATLE'S STERILIZER FORCEPS**



\* IS : 3642-1966 General requirements for surgical instruments.

All dimensions in millimetres.

FIG. 2 HEAVY CHEATE'S STERILIZER FORCEPS



All dimensions in millimetres.

FIG. 3 DETAILS OF ASSEMBLY OF SCREW

**6.1.1** A force of moderate intensity shall be applied by the fingers to each shank at right angles to the long axis and in the plane of the finger loops. This shall be repeated at several points along the shanks. The test shall then be repeated in a plane at right angles to the first. On completion of the test, the shanks shall not have acquired a permanent set.

**6.1.2** The terminal 6 mm portion of the jaw shall be made to hold a piece of wood 10 mm thick and the shanks approximated as fully as possible. On release of the force, the forceps shall show no sign of damage.

**6.1.3** The arm of the forceps with the finger loop shall be fixed in a vice at a point near the joint so that 150 mm of the arm, as measured from the upper surface of the vice jaws to the upper pole of the finger loop, protrudes above the vice. By the application of a force at the upper pole of the finger loop the shaft of the forceps shall be deflected in a plane at right angles to that of the finger loop by 8 mm as measured at the upper extremity of the clamped arm, that is, at the upper pole of the finger loop. On release of the force, no permanent set shall be observed. The test shall be repeated on the same arm with the finger loop fixed at its equator in the vice and the shank projecting above the vice. The deflecting force shall be applied to the shanks at a point 150 mm above the upper surface of the vice acting in a plane at right angles to that of the finger loop. The shank will be deflected by 8 mm as measured at the level of the point where the force is applied. On release of the force, no permanent set will be observed.

The complete test as described in 6.1.1 to 6.1.3 shall be repeated on the opposite arm.

**6.2 Corrosion Resistance Test**—The forceps shall be tested for corrosion resistance as prescribed in 6.2.1.

**6.2.1 Copper Sulphate Test** — The sample shall be scrubbed with soap and warm water, rinsed in hot water, followed by a dip in ethyl alcohol ( 95 percent ), and dried. The sample shall be completely immersed in copper sulphate solution at room temperature for 6 minutes and shall then be washed off with fresh water or wet cotton wool. The copper sulphate solution shall be made up as follows:

Copper sulphate	( $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ )	4.0 g
Sulphuric acid	( $\text{H}_2\text{SO}_4$ ) ( sp gr 1.84 )	10.0 g
Water	( $\text{H}_2\text{O}$ )	90.0 ml

There shall be no red stains or spots on the sample after the test, but the polished surface getting dull may be permitted.

## **7. MARKING**

**7.1** The forceps shall be clearly and indelibly marked with the manufacturer's name, initials or trade-mark.

**7.1.1** The forceps may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution ( Certification Marks ) Act, and the Rules and Regulations made thereunder. Presence of this mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard, under a well-defined system of inspection, testing and quality control during production. This system, which is devised and supervised by ISI and operated by the producer, has the further safeguard that the products as actually marketed are continuously checked by ISI for conformity to the standard. Details of conditions, under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

## **8. PACKING**

**8.1** The forceps shall be wrapped individually in wax paper or polyethylene bag and packed in such a manner that they do not come into contact with one another.

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malaria, but hill streams of a type familiar to us in Devonshire or Wales have not yet been popularly associated with malaria.

On arriving at Koraput, early in the year, I was myself deceived by the appearance of the country. It led me to expect that not till later in the season should I obtain at Koraput sufficient anopheline material for study. I thought that by going down to the lower plateau with its great tracts of jungle I might find plenty of anopheles and had arranged to go there. But on searching the villages I found ample anopheline material. At the end of January I descended to the lower plateau and found to my surprise that, at that season of the year, instead of adult anopheles being more abundant than on the upper plateau they were (in villages away from the actual foot of the hills) found with the greatest difficulty, whilst in some villages prolonged search failed to reveal a single one.

Although by searching cowsheds and native dwellings on the upper plateau, adult anopheles could, as a rule, be found in considerable numbers, this tract is an example of a country in which anophelines are abundant enough when so looked for, but are by no means very much in evidence to casual observation. In the Government bungalow at Koraput anopheles were by no means common. Anopheles (*A. maculipennis*) were far more common in the bedrooms of the house occupied by the writer when working at Sir Eustace Gurney's Freshwater Zoological Laboratory at Sutton Broad, Norfolk, than they ever were in the bungalows at Koraput or Dholiambo. The small extent to which anophelines were apparent to casual observation on the plateau was phenomenal when compared with the conditions in the north of India.

A very noticeable exception to the usual rule was observed on three nights in the middle of November. I was camping near rice fields which were being cut, and about an hour after dark anophelines in considerable numbers commenced coming into the tent. I often camped near water and rice fields, but on no other occasion did anophelines enter the tent in any numbers.

During the rains on the upper plateau *A. culicifacies* were very readily found resting near the roots of thick bushes where they were sheltered from the incessant drizzling rain.

Culicines were rarely taken on the 3,000 foot plateau. They never constituted as much as 3% of the total catch in villages in any month.

In contra distinction to the comparative abundance of adult anopheles in cowsheds, etc., larvae were at many times difficult to find.